

## CLAIMS

What is claimed is:

1. A method of determining the state of a disease or condition associated with endothelial cell dysfunction in a subject, the method comprising:

providing a subject suffering from or thought to be at risk of suffering from a disease or condition associated with endothelial cell dysfunction;

determining a level of profilin-1 at a site in the subject; and

relating the level to the state of the disease or condition.

2. The method of claim 1, wherein an increased level of profilin-1 indicates a positive diagnosis for the disease or condition.

3. The method of claim 1, wherein the disease or condition is diabetic vascular disease.

4. The method of claim 1, wherein the disease or condition is atherosclerosis.

5. The method of claim 1, wherein the disease or condition is a vascular disease selected from the group consisting of peripheral vascular disease, cerebrovascular disease, cardiovascular disease and any combination thereof.

6. The method of claim 1, wherein the site is associated with a vascular circulation sample from the subject.

7. The method of claim 6, wherein the vascular circulation sample is a serum sample.

8. The method of claim 6, wherein the vascular circulation sample is a plasma sample.

9. The method of claim 1, wherein the site is associated with a tissue sample from the subject.

10. The method of claim 9, wherein the tissue sample from the subject is an aorta tissue sample.

11. The method of claim 9, wherein the tissue sample from the subject is a retina tissue sample.

12. A kit for performing the method of determining the state of a disease or condition associated with endothelial cell dysfunction in claim 1, the kit comprising:

an indicator, wherein the indicator is capable of indicating the level of profilin-1; and

a device, wherein the device is capable of qualitatively or quantitatively monitoring the indicator for indication of the level of profilin-1.

13. A method for prophylaxis or treatment of a disease or condition associated with endothelial cell dysfunction in a subject, the method comprising:

providing a subject suffering from or thought to be at risk of suffering from a disease or condition associated with endothelial cell dysfunction;

administering to the subject a therapeutic composition or protocol to inhibit an activity or function of profilin-1, wherein inhibiting the activity or function of profilin-1 prevents or treats the disease or condition.

14. The method of claim 13, wherein a pharmaceutically acceptable carrier comprises the therapeutic composition.
15. The method of claim 13, wherein the therapeutic protocol comprises modifying, substituting, regulating or interfering with a gene associated with profilin-1 activity or function.
16. The method of claim 13, wherein the therapeutic protocol comprises downregulating gene transcription associated with profilin-1 synthesis.
17. The method of claim 13, wherein the disease or condition is diabetic vascular disease.
18. The method of claim 13, wherein the disease or condition is atherosclerosis.
19. The method of claim 13, wherein the disease or condition is a vascular disease selected from the group consisting of cerebrovascular disease, cardiovascular disease, peripheral vascular disease and any combination thereof.
20. A therapeutic composition for prophylaxis or treatment of a disease or condition associated with endothelial cell dysfunction in a subject, the therapeutic composition comprising:
  - a inhibitor capable of inhibiting an activity or function of profilin-1; and
  - a pharmaceutically acceptable carrier comprising the inhibitor.
21. The therapeutic composition of claim 20, wherein the disease or condition is diabetic vascular disease.

22. The therapeutic composition of claim 20, wherein the disease or condition is atherosclerosis.

23. The therapeutic composition of claim 20, wherein the disease or condition is a vascular disease selected from the group consisting of peripheral vascular disease, cerebrovascular disease and cardiovascular disease and any combination thereof.

24. A therapeutic protocol for prophylaxis or treatment of a disease or condition associated with endothelial cell dysfunction in a subject, the therapeutic protocol comprising:

providing a subject suffering from or thought to be at risk of suffering from a disease or condition associated with endothelial cell dysfunction; and

administering a small interfering RNA to the subject, wherein the small interfering RNA downregulates gene transcription associated with profilin-1 to prevent or treat the disease or condition.

25. The therapeutic protocol of claim 24, wherein the small interfering RNA is a synthetic small interfering RNA.

26. The therapeutic protocol of claim 24 or 25, wherein the small interfering RNA is delivered via a lentivirus.

27. The therapeutic protocol of claim 24 or 25, wherein the small interfering RNA is delivered to an artery selected from the group consisting of coronary, carotid, femoral and a combination thereof.